

Listing of Claims

1-25 (canceled).

26. (currently amended) An enzyme immunoassay construct, comprising:

a first substrate to which is bound a plurality of detection multiple antigenic peptides, each detection multiple antigenic peptide comprising a portion of an immunodominant region of a transmembrane envelope protein of a primate immunodeficiency virus, wherein at least one simian immunodeficiency virus is represented in at least one of the detection multiple antigenic peptides; and

a second substrate to which is bound a plurality of differentiation multiple antigenic peptides, each differentiation multiple antigenic peptide comprising a portion of a V3-loop of an envelope protein of a primate immunodeficiency virus, wherein at least one simian immunodeficiency virus is represented in at least one of the differentiation multiple antigenic peptides;

wherein the detection multiple antigenic peptide ~~and the differentiation multiple antigenic peptide each comprise~~ consists of a core matrix and at least two linear antigenic sequences bonded to the core matrix by β -alanine and d-aspartic acid, each linear antigenic sequence is less than 16 amino acid residues and the β -alanine and d-aspartic acid serving as spacer amino acids between each linear antigenic sequence and the core matrix; and

wherein the differentiation multiple antigenic peptide consists of a core matrix and at least two linear antigenic sequences bonded to the core matrix by diaminopropionic acid, each linear antigenic sequence is less than 16 amino acid residues and diaminopropionic acid serving as a spacer amino acid between each linear antigenic sequence and the core matrix.

27. (original) The immunoassay of claim 26, wherein the detection multiple antigenic peptide comprises a portion of the immunodominant region of the transmembrane protein gp41 or gp36, and the differentiation multiple antigenic peptide comprises a portion of the V3-loop of the envelope protein gp120.

28. (previously presented) The immunoassay of claim 26, wherein each linear antigenic sequence of the detection multiple antigenic peptide comprises 5 to 15 amino acid residues, and each

linear antigenic sequence of the differentiation multiple antigenic peptide comprises 5 to 15 amino acid residues.

29. (currently amended) An enzyme immunoassay construct, comprising:

a first array of a plurality of detection multiple antigenic peptides comprising a portion of an immunodominant region of a transmembrane protein of a primate immunodeficiency virus; and

a second array of a plurality of differentiation multiple antigenic peptides comprising a portion of a V3-loop of an envelope protein of a primate immunodeficiency virus;

wherein the detection multiple antigenic peptide ~~and the differentiation multiple antigenic peptide each comprise~~ consists of a core matrix and at least two linear antigenic sequences bonded to the core matrix by β -alanine and d-aspartic acid, each linear antigenic sequence is less than 16 amino acid residues and the β -alanine and d-aspartic acid serving as spacer amino acids between each linear antigenic sequence and the core matrix;

wherein the differentiation multiple antigenic peptide consists of a core matrix and at least two linear antigenic sequences bonded to the core matrix by diaminopropionic acid, each linear antigenic sequence is less than 16 amino acid residues and diaminopropionic acid serving as a spacer amino acid between each linear antigenic sequence and the core matrix and at least one simian immunodeficiency virus is represented in at least one of the detection multiple antigenic peptides or the differentiation multiple antigenic peptides.

30-35 (canceled).

36. (original) The immunoassay of claim 26, wherein the immunoassay does not include any detection multiple antigenic peptide from a human immunodeficiency virus and any differentiation multiple antigenic peptide from a human immunodeficiency virus.

37-40 (canceled).

41. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the detection multiple antigenic peptide ~~comprises a sequence of~~ is WGCSGKAVCYT (SEQ ID

NO: 1).

42. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide ~~comprises~~ is RGEVQIGPGMTFYNI (SEQ ID NO: 14).

43. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the detection multiple antigenic peptide ~~comprises a sequence of~~ is WGCSGKAVCYT (SEQ ID NO: 1) and the linear antigenic sequence of the differentiation multiple antigenic peptide ~~comprises~~ is RGEVQIGPGMTFYNI (SEQ ID NO: 14).

44. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the detection multiple antigenic peptide ~~comprises~~ consists of a sequence

$X_1GCX_4X_5X_6X_7X_8CX_{10}T$

wherein X_1 is W, I or F;

X_4 is S, A or Q;

X_5 is G, D, F, W or N;

X_6 is K, R, M, S, A;

X_7 is A, V or Q;

X_8 is V, or I; and

X_{10} is Y, H or R.

45. (currently amended) The immunoassay of claim 26, wherein the detection multiple antigenic peptide and the differentiation multiple antigenic peptide each ~~comprise~~ consist of four linear antigenic sequences bonded to their respective core matrix.

46. (previously presented) The immunoassay of claim 26, wherein there are a plurality of detection multiple antigenic peptides and a plurality of differentiation multiple antigenic peptides, and

all recognized SIV strain epitopes are represented in at least one of the detection multiple antigenic peptide or the differentiation multiple antigenic peptide.

47. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises VLPVTIMSGLVFHSQ (SEQ ID NO: 15).

48. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises VLPVTIMAGLVFHSQ (SEQ ID NO: 16).

49. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises IKNIQLAAGYFLPVI (SEQ ID NO: 17).

50. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises EVSTISSTGLLFYYG (SEQ ID NO: 18).

51. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises HRNLNTANGAKFY YE (SEQ ID NO: 19).

52. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises VKGISLATGVFISLR (SEQ ID NO: 20).

53. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises IVSVPSASGLIFYHG (SEQ ID NO: 21).

54. (withdrawn) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide comprises YRAVHMATGLSFYTT (SEQ ID NO: 22).

55. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the detection multiple antigenic peptide ~~comprises a sequence of~~ is WGCSGKAVCYT (SEQ ID NO: 1), IGCANMQICRT (SEQ ID NO: 8), or FGCAWRQVCHT (SEQ ID NO: 9), ~~or a sequence~~

~~having at least 80% sequence identity to one or more of these sequences.~~

56. (currently amended) The immunoassay of claim 26, wherein the linear antigenic sequence of the differentiation multiple antigenic peptide ~~comprises~~ consists of one of SEQ ID NOS: 14-22 ~~or a sequence having at least 80% sequence identity to one or more of those sequences.~~

57. (previously presented) The immunoassay of claim 29, wherein each linear antigenic sequence of the detection multiple antigenic peptide comprises 5 to 15 amino acid residues, and each linear antigenic sequence of the differentiation multiple antigenic peptide comprises 5 to 15 amino acid residues.

58. (currently amended) The immunoassay of claim 29, wherein the linear antigenic sequence of the detection multiple antigenic peptide ~~comprises a sequence of~~ is WGCSGKAVCYT (SEQ ID NO: 1) and the linear antigenic sequence of the differentiation multiple antigenic peptide ~~comprises~~ is RGEVQIGPGMTFYNI (SEQ ID NO: 14).

59. (currently amended) The immunoassay of claim 29, wherein the detection multiple antigenic peptide and the differentiation multiple antigenic peptide each ~~comprise~~ consists of four linear antigenic sequences bonded to their respective core matrix.

60. (new) An enzyme immunoassay construct, comprising:

a first substrate to which is bound a plurality of detection multiple antigenic peptides, each detection multiple antigenic peptide comprising a portion of an immunodominant region of a transmembrane envelope protein of a primate immunodeficiency virus, wherein at least one simian immunodeficiency virus is represented in at least one of the detection multiple antigenic peptides; and

a second substrate to which is bound a plurality of differentiation multiple antigenic peptides, each differentiation multiple antigenic peptide comprising a portion of a V3-loop of an envelope protein of a primate immunodeficiency virus, wherein at least one simian immunodeficiency virus is represented in at least one of the differentiation multiple antigenic peptides;

wherein the detection multiple antigenic peptide consists of a core matrix and four linear

detection antigenic sequences bonded to the core matrix by β -alanine and d-aspartic acid, each linear detection antigenic sequence is WGCSGKAVCYT (SEQ ID NO: 1) and the β -alanine and d-aspartic acid serve as spacer amino acids between each linear detection antigenic sequence and the core matrix; and

wherein the differentiation multiple antigenic peptide consists of a core matrix and four linear antigenic sequences bonded to the core matrix by diaminopropionic acid, each differentiation linear antigenic sequence is RGEVQIGPGMTFYNI (SEQ ID NO: 14) and diaminopropionic acid serves as a spacer amino acid between each differentiation linear antigenic sequence and the core matrix.